

EXPRESS LANE NETWORK TOLL SYSTEM INTEGRATION BRIEFING PAPER

9/18/2013

PURPOSE

This document provides an overview of BAIFA's upcoming procurement of a Toll System Integrator (TSI). It includes details about BAIFA's Express Lane Network (ELN), the procurement planned process, and relevant but broad information on the elements that may be of the most interest to potential proposers.

BACKGROUND

BAIFA was created in 2006 as a Joint Powers Authority (JPA) between the Metropolitan Transportation Commission (MTC) and the Bay Area Toll Authority (BATA) to plan, develop, operate and finance transportation projects, including express lanes. BAIFA's Express Lane Network (ELN) is comprised of 270 miles of express lane corridors located in Solano, Contra Costa and Alameda Counties.

OBJECTIVES

1. Implement a toll program that provides a positive and consistent customer experience.
2. Meet or exceed the delivery schedule for tolling commencement.
3. Leverage existing technology and the latest innovations to ensure a high level of system accuracy and performance.
4. Develop a scalable system that can accommodate for expansion of the express lane network and program over the next 7-10 years.
5. Design for long-term cost effectiveness and efficiency for operations and maintenance activities.

PROCUREMENT INFORMATION

Timeframes:

2013 Mid October	Draft RFP published
2013 Late October/Early Nov.	Proposer one-on-one meetings
2013 November	Final RFP published
2014 January	Proposals due
2014 February	Proposer Discussions
2014 March	Best And Final Offers due
2014 April	Award

Estimated Elements of the procurement include:

- Solicitation for industry feedback on the RFP through one-on-one meetings with potential proposers
- Mandatory pre-bid conference and visit to the host site
- Evaluation includes cost and technical criteria

BAIFA ELN INFORMATION

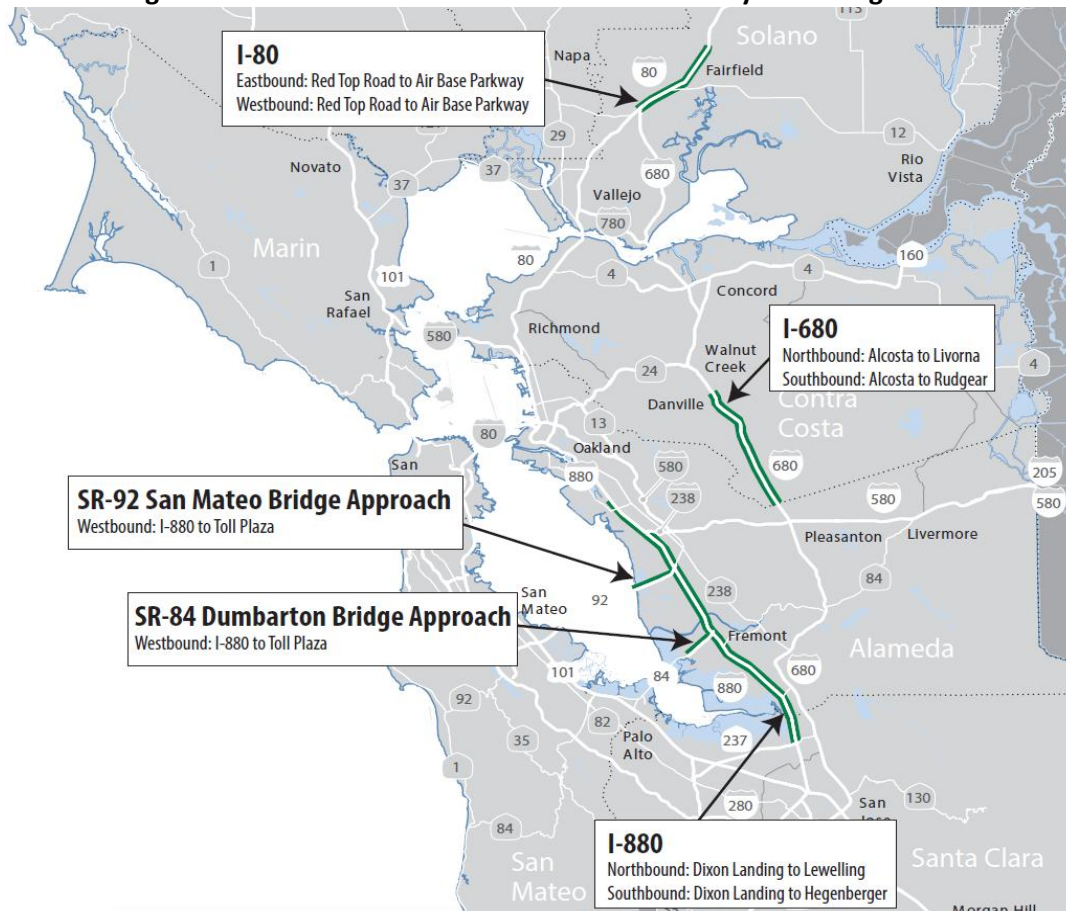
Description:

Conversion from existing HOV lanes to tolled express lanes for approximately 90 directional miles on the following corridors in BAIFA's Express Lane Network (ELN) on the following corridors (also shown in Figure 1):

- I-680 in Contra Costa County between Alcosta Road and Rudgear Road (approximately 12 miles)

- I-880 in Alameda County between Marina and Dixon Landing Road (approximately 28 miles)
- the San Mateo Bridge (SR 92) westbound approach (approximately 3 miles)
- the Dumbarton Bridge (SR 84) westbound approach (approximately 3 miles)
- I-80 in Solano County between Red Top Road and Air Base Parkway (approximately 11 miles)

Figure 1: BAIFA ELN Corridors - First Phase of Toll System Integration



Expected Delivery Schedule:

2014 May	Notice to Proceed
2014 Summer	Factory Acceptance Testing
2015 Summer	Site Turnover for I-680 Installation
2015 Early Fall	Onsite Factory Installation Test (OFIT)
2016 Spring	I-680 Tolling Commencement
2017 Spring	I-880/SR92/SR84 Tolling Commencement
2017 Early Fall	I-80 Tolling Commencement

Key Concepts

BAIFA's Express Lane Network (ELN) includes several key concepts which have been structured into Draft Business Rules. These rules are continually being refined during program development and are meant to capture the means by which BAIFA operates their program and drives system design, functionality, management and operation. Some of the key concepts that serve as a foundation for the development of the Draft Business Rules include:

- **Open Access** Driver access to the express lanes will be continuous open access, with restricted access only as needed for traffic safety or management purposes.

In continuous access segments, there will be no barriers, solid striping or buffers between the express lanes and the general purpose lanes. In limited access segments, the express lane will be separate from the general purpose lanes by a double striped buffer.

• Read Points	Read Points will be spaced approximate one per mile. (“Read Point” is a collective term for each point at which the toll system detects vehicles, reads transponders, and captures images.)
• Dynamic Pricing	Toll rates will be determined and set dynamically the majority of the time, based on traffic levels. There may be pre-defined periods when express lane tolls are not charged, or are charged at a flat rate.
• Zone Pricing	Tolling will be zone-based, with a single toll rate charged per zone. There will be an estimated three to five read points per pricing zone, unless access requirements dictate differently.
• Variable Toll Message Signs (VTMS)	Variable Toll Message Signs (VTMS) will be used to display toll rates to drivers at multiple points along each facility. Signage will display tolls for the current roadway zone and segment. Roadway segments end at key destination points, which may or may not include multiple zones.
• Locked-in Rates	The toll rates displayed on variable toll rate message signs (VTMS) are locked in for drivers as they enter a zone/segment.
• Trip Building	Multiple, consecutive zone tolls will be combined into a single trip price for posting to customer accounts.
• Enforcement Beacons	Roadside beacons will be used to support HOV enforcement of switchable transponder status.
• Traffic Management System (TMS)	The toll collection system includes technologies, which will collect data for use by the dynamic pricing algorithm as well as other traffic management efforts.
• Closed-Circuit Television (CCTV)	The toll collection system includes closed-circuit television (CCTV) subsystem for use by ELN roadway operations staff.
• FasTrak[®] Transponders	ELN facilities will read switchable transponders to be procured by BATA, as well as standard Fastrak [®] transponders already in circulation. The switchable transponders will have the functionality to declare occupancy (1, HOV 2+, or HOV 3+).
• HOV Operational Hours	ELN operational hours will coincide with HOV hours for each respective corridor.
• Regional Customer Service Center (RCSC)	ELN transactions will be sent to the existing Fastrak RCSC for posting to customer accounts and revenue collection and exchange with CTOC interoperable agencies.

- **Toll Bridges** Approaches to some transbay bridges will be included in the ELN, but express lane tolling on the approaches will be kept separate from existing Bay Area Toll Authority tolling on bridge tolls.

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- **Regional Express Lane Agencies** The TSI will not be integrating into any existing toll systems operated by other agencies in the Bay Area, but BAIFA intends to continue close coordination to ensure a consistent customer experience throughout all express lanes in the region.
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- **Roadside Communications Network** The scope of this RFP includes the design, development and maintenance of the roadside communications network necessary to support connectivity along the corridors. BAIFA shall provide the backhaul communications network to the ELN Host system.

Key elements for the Toll System Integration (TSI) Scope:

The Toll System Integrator (TSI) selected to perform these services shall design, develop, furnish, fabricate, install, integrate, test and maintain a fully functioning toll collection system (TCS) in support of BAIFA's toll implementation and operations. Within the fully functioning TCS, the following areas are defined as critical areas of scope. These elements are the core functions of the system; impact design and development efforts; are complex in nature; and will require thorough testing prior to deployment on the first corridor.

System Architecture

- Requirements and assumptions regarding location of all equipment including communications within a corridor
- Sample layout of equipment, communications and power for type of equipment location
- Preliminary architecture for each type of Read Point
- System security and access control
- Data storage, access and recovery; back up and disaster recovery/business continuity
- End to end data flows including both internal and external interfaces
- Sizing for capacity
- Toll Roadway Operations Center integration
- Automatic license plate recognition (ALPR)
- Lane operation modes
- Maintenance Online Management System
- Back-up Host and Operations locations

Communications

- Communications network architecture
- Communication equipment functions and installations
- Network security, protection and access
- Network configuration
- Internet protocol (IP) addressing scheme

Lane Level Systems

- Vehicle detection and separation
- Vehicle processing in exception cases
- Violation enforcement system (VES)
- Variable toll message signs (VTMS) operations and failure logic
- Traffic monitoring systems (TMS)
- Data collection and storage in local servers
- Messages between controllers and Host
- Functionalities during equipment failures
- Closed-circuit television (CCTV) system

Host Level

- Toll rate setting including dynamic pricing algorithm
- Trip transaction building
- Toll rate overrides and corrections
- Financial and audit applications
- Reporting and monitoring
- User and system interfaces
- Enforcement tools
- Diagnostics

The TSI will not provide:

- Any civil or heavy construction work
- The regional backhaul communications network to the Host and beyond
- Roadway operations of the express lanes
- Transponders

ADDITIONAL INFORMATION

Documents related to this procurement will be published at: <http://procurements.mtc.ca.gov/>.

Additional information on BAIFA's express lane program is available at:
http://www.mtc.ca.gov/projects/express_lanes/info_center/.